

**ABSTRACT**

Method and apparatus for plasma etching both metal and inorganic dielectric layers in a single chamber during deep sub-micron semiconductor fabrication. Fluorine based chemistries, or a mixture of fluorine and chlorine based chemistries, are used to etch the inorganic dielectric layer. A switch is then made to chlorine based chemistries, within the same etching chamber, which are utilized to etch the metal layer. Overetching may also be performed with chlorine based chemistries to clear any residuals.